

CC330x SimpleLink™ Wi-Fi 6 and Bluetooth® Low Energy Companion IC

1 Features

Key Features

- Wi-Fi 6 (802.11ax)
- Bluetooth® Low Energy 5.4 in CC3301 devices
- Companion IC to any processor or MCU host capable of running a TCP/IP stack
- Integrated 2.4GHz PA for a complete wireless solution with up to +20.5dBm output power.
- Operating temperature: –40°C to +105°C
- Application throughput up to 50Mbps

Extended Features

- Wi-Fi 6
 - 2.4GHz, 20MHz, single spatial stream
 - MAC, baseband, and RF transceiver with support for IEEE 802.11 a/b/g/n/ax
 - OFDMA, trigger frame, MU-MIMO (downlink), basic service set coloring, and target wake time (TWT) for improved efficiency
 - Hardware-based encryption and decryption supporting WPA2 and WPA3
 - Excellent interoperability
 - Support for 4-bit SDIO or SPI host interfaces
- Bluetooth Low Energy 5.4
 - LE coded PHYs (long range), LE 2M PHY (high speed), and advertising extension
 - Host controller interface (HCI) transport with option for UART or shared SDIO
- Enhanced security
 - Secured host interface
 - Firmware authentication
 - Anti-rollback protection
- Multirole support (for example, concurrent STA and AP) to connect with Wi-Fi devices on different RF channels (Wi-Fi networks)
- Optional antenna diversity or selection
- 3-wire or 1-wire PTA for external coexistence with additional 2.4GHz radios (for example, Thread or Zigbee)
- Power management
 - V_{MAIN} , V_{IO} , V_{pp} : 1.8V
 - V_{PA} : 3.3V
- Clock sources
 - 40MHz XTAL fast clock
 - Internal slow clock or external 32.768kHz slow clock
- Small package size

- Easy to design with 40-pin, 5mm × 5mm quad flat no-leaded (QFN) package, 0.4mm pitch

2 Applications

- [Grid infrastructure](#)
 - [Electricity meter](#)
 - [String inverter](#)
 - [Micro inverter](#)
 - [Energy storage power conversion system \(PCS\)](#)
 - [EV charging infrastructure](#)
- [Building and home automation](#)
 - [HVAC controller](#)
 - [HVAC gateway](#)
 - [Thermostat](#)
 - [Building security gateway](#)
 - [Garage door system](#)
 - [IP network camera and video doorbell](#)
 - [Wireless security camera](#)
- [Appliances](#)
 - [Refrigerator and freezer](#)
 - [Oven](#)
 - [Washer and dryer](#)
 - [Residential water heater and heating system](#)
 - [Air purifier and humidifier](#)
 - [Coffee machine](#)
 - [Air conditioner indoor unit](#)
 - [Vacuum robot](#)
 - [Robotic lawn mower](#)
- [Medical](#)
 - [Infusion pump](#)
 - [Electronic hospital bed and bed control](#)
 - [Multiparameter patient monitor](#)
 - [Blood pressure monitor](#)
 - [CPAP machine](#)
 - [Telehealth systems](#)
 - [Ultrasound scanner](#)
 - [Ultrasound smart probe](#)
 - [Electric toothbrush](#)
- [Retail automation and payment](#)
- [Printers](#)



3 Description

The SimpleLink™ Wi-Fi™ CC33xx family of devices is where affordability meets reliability, enabling engineers to connect more applications with confidence. CC33xx are single-chip Wi-Fi 6 and Bluetooth Low Energy 5.4 devices. The CC3300 and CC3301 are the first dual-band devices in this pin-to-pin compatible family.

- **CC3300** : A 2.4GHz Wi-Fi 6 companion IC
- **CC3301** : A 2.4GHz Wi-Fi 6 and Bluetooth Low Energy 5.4 companion IC

The CC330x offers Wi-Fi 6 and BLE while maintaining compatibility with Wi-Fi 4 (802.11 a/b/g/n) and Wi-Fi 5 (802.11ac). These CC330x devices are the 10th-generation connectivity combination chip from Texas Instruments. As such, the CC330x is based on proven technology. These devices are ideal for cost-sensitive embedded applications with a Linux® or RTOS host running TCP/IP. CC330x brings the efficiency of Wi-Fi 6 to embedded device applications for the Internet of Things (IoT) with a small PCB footprint and a highly optimized bill of materials.

Device Information

| PART NUMBER ⁽¹⁾ | WI-FI 2.4 SISO | BLUETOOTH LOW ENERGY |
|----------------------------|----------------|----------------------|
| CC3300ENJARSBR | ✓ | |
| CC3301ENJARSBR | ✓ | ✓ |

(1) For more information, see the *Mechanical, Packaging, and Orderable* addendum.

4 System Diagram

Figure 4-1 shows a basic system diagram for the CC3301.

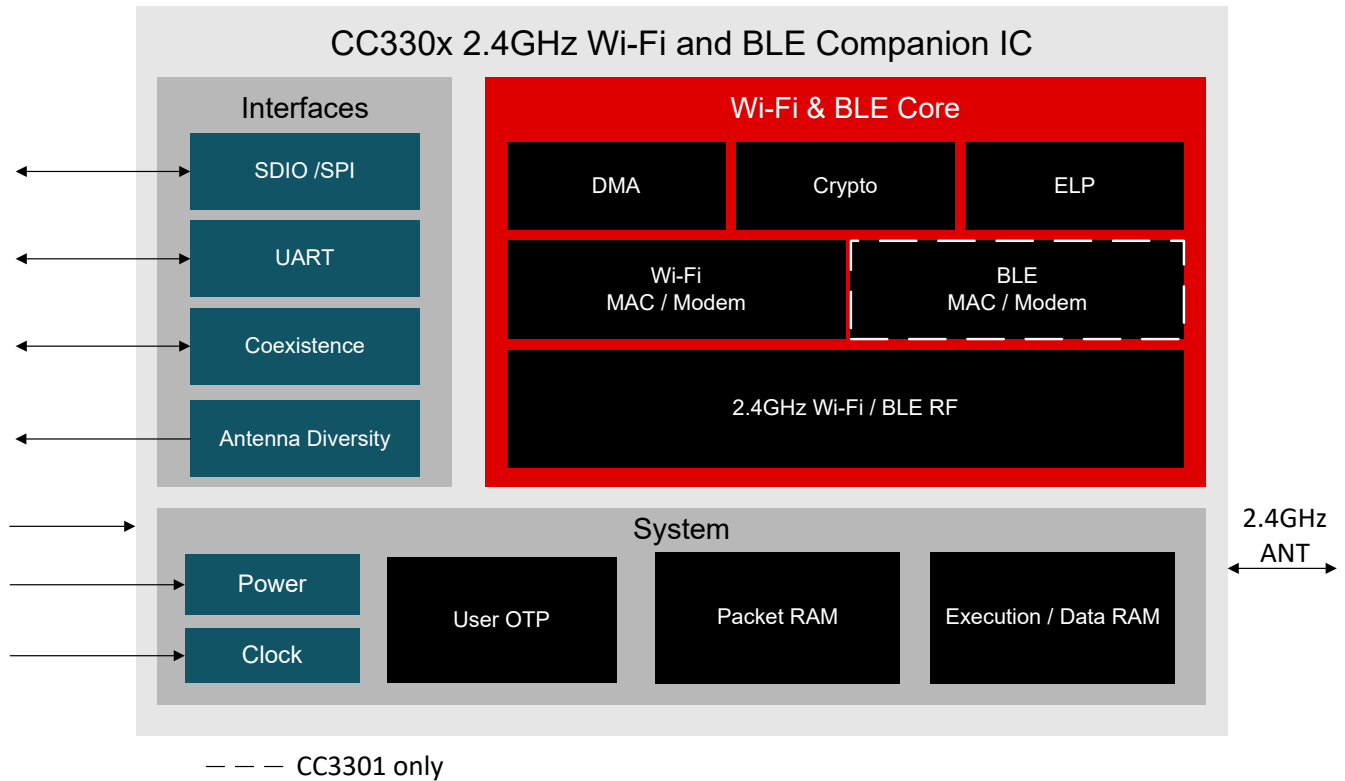


Figure 4-1. CC3301 High-Level System Diagram

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5 Pin Configuration and Functions

5.1 Pin Diagram

Figure 5-1 shows pin assignments for the 40-pin WQFN package.

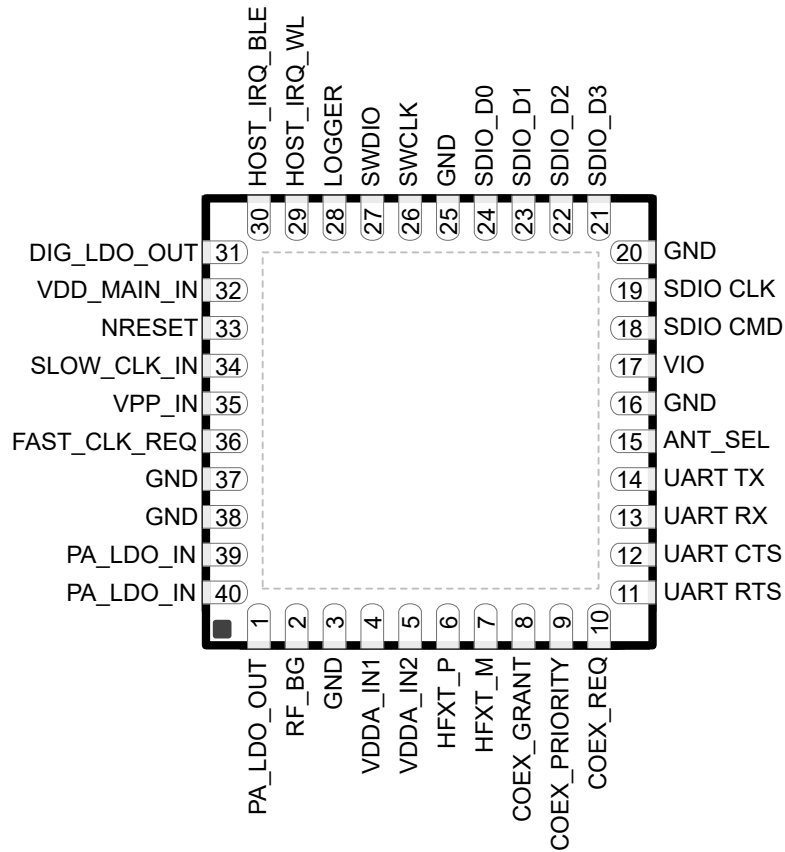


Figure 5-1. CC3301 Pin Diagram

5.2 Pin Attributes

Table 5-1. Pin Attributes

| PIN | SIGNAL NAME | TYPE | DIR (I/O) | VOLTAGE LEVEL | SHUTDOWN STATE ⁽¹⁾ | STATE AFTER POWER-UP | DESCRIPTION |
|-----|------------------------------|---------|-----------|-----------------|-------------------------------|----------------------|--|
| 1 | PA_LDO_OUT | Analog | | | | | RF power amplifier LDO output |
| 2 | RF_BG | RF | I/O | | | | Bluetooth Low Energy and WLAN 2.4GHz RF port |
| 3 | GND | GND | | | | | GND |
| 4 | VDDA_IN1 | POW | | | | | 1.8V supply for analog domain |
| 5 | VDDA_IN2 | POW | | | | | 1.8V supply for analog domain |
| 6 | HFXT_P | Analog | | Sine | | | XTAL_P |
| 7 | HFXT_M | Analog | | | | | XTAL_N |
| 8 | COEX_GRANT ⁽²⁾ | Digital | O | V _{IO} | PD | PD | External coexistence interface - grant |
| 9 | COEX_PRIORITY ⁽²⁾ | Digital | I | V _{IO} | PU | PU | External coexistence interface - priority |
| 10 | COEX_REQ ⁽²⁾ | Digital | I | V _{IO} | PU | PU | External coexistence interface - request |
| 11 | UART RTS | Digital | O | V _{IO} | PU | PU | Device RTS signal - flow control for BLE HCI |
| 12 | UART CTS | Digital | I | V _{IO} | PU | PU | Device CTS signal - flow control for BLE HCI |
| 13 | UART RX | Digital | I | V _{IO} | PU | PU | UART RX for BLE HCI |
| 14 | UART TX | Digital | O | V _{IO} | PU | PU | UART TX for BLE HCI |
| 15 | ANT_SEL ⁽²⁾ | Digital | O | V _{IO} | PD | PD | Antenna select control line |
| 16 | GND | GND | | | | | GND |
| 17 | VIO | POW | | | | | 1.8V IO supply |
| 18 | SDIO CMD | Digital | I/O | V _{IO} | HiZ | HiZ | SDIO command or SPI PICO |
| 19 | SDIO CLK | Digital | I | V _{IO} | HiZ | HiZ | SDIO clock or SPI clock |
| 20 | GND | GND | | | | | GND |
| 21 | SDIO D3 | Digital | I/O | V _{IO} | HiZ | PU | SDIO data D3 or SPI CS |
| 22 | SDIO D2 | Digital | I/O | V _{IO} | HiZ | HiZ | SDIO data D2 |
| 23 | SDIO D1 | Digital | I/O | V _{IO} | HiZ | HiZ | SDIO data D1 |
| 24 | SDIO D0 | Digital | I/O | V _{IO} | HiZ | HiZ | SDIO data D0 or SPI POCI |
| 25 | GND | GND | | | | | GND |
| 26 | SWCLK | Digital | I | V _{IO} | PD | PD | Serial wire debug clock |
| 27 | SWDIO | Digital | I/O | V _{IO} | PU | PU | Serial wire debug I/O |
| 28 | LOGGER ⁽³⁾ | Digital | O | V _{IO} | PU | PU | Tracer (UART TX debug logger) |
| 29 | HOST_IRQ_WL ⁽³⁾ | Digital | O | V _{IO} | PD | 0 | Interrupt request to host for WLAN |
| 30 | HOST_IRQ_BLE | Digital | O | V _{IO} | PD | PD | Reserved for future use |
| 31 | DIG_LDO_OUT | Analog | O | | | | Digital LDO output to decoupling capacitor |
| 32 | VDD_MAIN_IN | POW | | | | | 1.8V supply input for SRAM and digital |

Table 5-1. Pin Attributes (continued)

| PIN | SIGNAL NAME | TYPE | DIR (I/O) | VOLTAGE LEVEL | SHUTDOWN STATE ⁽¹⁾ | STATE AFTER POWER-UP | DESCRIPTION |
|-----|--------------|---------|-----------|-----------------|-------------------------------|----------------------|--|
| 33 | nRESET | Digital | I | V _{IO} | PD | PD | Reset line for enabling or disabling device (active low) |
| 34 | SLOW_CLK_IN | Digital | I | V _{IO} | PD | PD | 32.768kHz RTC clock input |
| 35 | VPP_IN | POW | | | | | 1.8V OTP programming input supply |
| 36 | FAST_CLK_REQ | Digital | O | V _{IO} | PD | PD | Fast clock request from the device |
| 37 | GND | GND | | | | | GND |
| 38 | GND | GND | | | | | GND |
| 39 | PA_LDO_IN | POW | | | | | 3.3V supply for PA |
| 40 | PA_LDO_IN | POW | | | | | 3.3V supply for PA |

- (1) All digital I/Os (with the exception of SDIO signals) are Hi-Z when the device is in Shutdown mode with internal PU/PD according to the "SHUTDOWN STATE" column.
- (2) See software release notes for the support level.
- (3) LOGGER and HOST_IRQ_WL pins are sensed by the device during boot, see [CC33xx Hardware Integration](#).

6 Specifications

All specifications are given at the CC330x pins. Typical values are measured with a nominal device at 25°C.

6.1 Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted)⁽¹⁾

| PARAMETER | | PINS | MIN | MAX | UNIT |
|-------------------|--|----------|------|-----------------------|------|
| V _{PA} | V _{DD} PA Voltage | 39,40 | -0.5 | 4.2 ⁽²⁾ | V |
| V _{MAIN} | Main supply voltage for analog and digital - VDD_MAIN_IN, VDDA_IN1, VDDA_IN2 | 32, 4, 5 | -0.5 | 2.1 | V |
| V _{IO} | VDD IO Voltage | 17 | -0.5 | 2.1 | V |
| | Input Voltage to all digital pins | | -0.5 | V _{IO} + 0.5 | V |
| | HFXT_P Input Voltage | 6 | -0.5 | 2.1 | V |
| V _{PP} | VPP OTP Voltage | 35 | -0.5 | 2.1 | V |
| T _A | Operating Ambient Temperature | | -40 | 105 | °C |
| T _{stg} | Storage temperature | | -55 | 155 | °C |

- Operation outside the Absolute Maximum Ratings may cause permanent device damage. Absolute Maximum Ratings do not imply functional operation of the device at these or any other conditions beyond those listed under Recommended Operating Conditions. If outside the Recommended Operating Conditions but within the Absolute Maximum Ratings, the device may not be fully functional, and this may affect device reliability, functionality, performance, and shorten the device lifetime.
- Above 85°C, conditions beyond those indicated under *Recommended Operating Conditions* may cause permanent damage.

6.2 ESD Ratings

| | | | | VALUE | UNIT |
|--------------------|-------------------------|---|------------|-------|------|
| V _(ESD) | Electrostatic discharge | Human body model (HBM), per ANSI/ESDA/JEDEC JS-001 ⁽¹⁾ | RF pins | ±1000 | V |
| | | | Other pins | ±2000 | |
| | | Charged device model (CDM), per ANSI/ESDA/JEDEC JS-002 ⁽²⁾ | RF pins | ±250 | |
| | | | Other pins | ±500 | |

- JEDEC document JEP155 states that 500V HBM allows safe manufacturing with a standard ESD control process.
- JEDEC document JEP157 states that 250V CDM allows safe manufacturing with a standard ESD control process.

6.3 Recommended Operating Conditions

| PARAMETER | | PINS | MIN | TYP | MAX | UNIT |
|-------------------|--|--------|------|-----|--------------------|------|
| V _{MAIN} | Main supply voltage digital and analog - VDD_MAIN_IN, VDDA_IN1, VDDA_IN2 | 32,4,5 | 1.62 | 1.8 | 1.98 | V |
| V _{PA} | DC supply rail for PA | 39,40 | 3 | 3.3 | 3.6 | |
| V _{IO} | DC supply rail for input/output | 17 | 1.62 | 1.8 | 1.98 | |
| V _{PP} | DC supply rail for OTP memory | 35 | 1.62 | 1.8 | 1.98 | V |
| T _A | Operating ambient temperature | | -40 | | 105 ⁽¹⁾ | °C |
| | Maximum power dissipation | | | | 2 | W |

- The CC3300 and CC3301 devices may operate at temperatures of up to 105°C. This allows the device to be used reliably in applications that may be exposed to higher ambient temperature over certain periods of the product's life. At temperatures higher than 85°C, the WLAN/BLE performance may degrade. For more information please reference this application note <https://www.ti.com/secureresources/CC33XX-THERMAL-GUIDELINES-NDA>.

6.4 Electrical Characteristics

| PARAMETER | DESCRIPTION | TEST CONDITION | MIN | TYP | MAX | UNIT |
|-----------------|---------------------------|----------------|------------------------|-----|------------------------|------|
| V _{IH} | High Level Input Voltage | | 0.65 × V _{IO} | | V _{IO} | V |
| V _{IL} | Low Level Input Voltage | | 0 | | 0.35 × V _{IO} | |
| V _{OH} | High Level Output Voltage | at 4mA | V _{IO} – 0.45 | | V _{IO} | |
| V _{OL} | Low Level Output Voltage | at 4mA | 0 | | 0.45 | |

6.5 Thermal Resistance Characteristics

| THERMAL METRIC ⁽¹⁾ | DESCRIPTION | | UNIT |
|-------------------------------|--|------|------|
| R _{θJA} | Junction-to-ambient thermal resistance (According to JEDEC EIA/JESD 51 document) | 30.5 | °C/W |
| R _{θJC(top)} | Junction-to-case (top) thermal resistance | 16.7 | |
| R _{θJB} | Junction-to-board thermal resistance | 10 | |
| Ψ _{JT} | Junction-to-top characterization parameter | 0.1 | |
| Ψ _{JB} | Junction-to-board characterization parameter | 10 | |
| R _{θJC(bot)} | Junction-to-case (bottom) thermal resistance | 1.7 | |

(1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC Package Thermal Metrics](#) application report.

6.6 WLAN Performance: 2.4GHz Receiver Characteristics

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|--------------------------|------|-------|------|------|
| Operational Frequency Range | | 2412 | | 2472 | MHz |
| Sensitivity: 8% PER for 11b rates, 10% PER for 11g/n/ax rates | 1Mbps DSSS | | -98.5 | | dBm |
| | 2Mbps DSSS | | -95.8 | | |
| | 11Mbps CCK | | -90.5 | | |
| | 6Mbps OFDM | | -93.7 | | |
| | 54Mbps OFDM | | -76 | | |
| | HT MCS0 MM 4K | | -93.5 | | |
| | HT MCS7 MM 4K | | -73.4 | | |
| | HE MCS0 4K | | -93.2 | | |
| Maximum input level: 8% PER for 11b rates, 10% PER for 11g/n/ax rates | 1 DSSS | | 0 | | dBm |
| | OFDM6, HT MCS0, HE MCS0 | | 0 | | |
| | OFDM54, HT MCS7, HE MCS7 | | -9 | | |
| Adjacent Channel Rejection | 1Mbps DSSS | | 45 | | dB |
| | 11Mbps CCK | | 39 | | |
| | 6Mbps OFDM | | 20 | | |
| | 54Mbps OFDM | | 3 | | |
| | HT MCS0 | | 20 | | |
| | HT MCS7 | | 3 | | |
| | HE MCS0 | | 16 | | |
| HE MCS7 | | -1 | | | |
| RSSI Accuracy | -90dBm to -30dBm | -3 | | 3 | dB |

6.7 WLAN Performance: 2.4GHz Transmitter Power

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|-----------------|------|------|------|------|
| Operational Frequency Range | | 2412 | | 2472 | MHz |
| Maximum output power at $V_{PA} > 3.0V$ | 1Mbps DSSS | | 20.5 | | dBm |
| | 6Mbps OFDM | | 20.2 | | |
| | 54Mbps OFDM | | 17.4 | | |
| | HT MCS0 MM | | 20.2 | | |
| | HT MCS7 MM | | 17.4 | | |
| | HE MCS0 | | 20.2 | | |
| | HE MCS7 | | 17.3 | | |

6.8 BLE Performance: Receiver Characteristics

| PARAMETER | TEST CONDITION | MIN | TYP | MAX | UNIT |
|--|--|-----|-------------------|-----|------|
| BLE 125Kbps (LE Coded) Receiver Characteristics | | | | | |
| Receiver sensitivity ⁽²⁾ | PER <30.2% | | -103.6 – 101.7 | | dBm |
| Receiver saturation | PER <30.2% | | 0 2 | | dBm |
| Co-channel rejection ⁽¹⁾ | Wanted signal at -79dBm, modulated interferer in channel | | 10 | | dB |
| Selectivity, $\pm 1\text{MHz}$ ⁽¹⁾ | Wanted signal at -79dBm, modulated interferer at $\pm 1\text{MHz}$. | | 0 / 0 | | dB |
| Selectivity, $\pm 2\text{MHz}$ ⁽¹⁾ | Wanted signal at -79dBm, modulated interferer at $\pm 2\text{MHz}$. | | -37 / -30 | | dB |
| Selectivity, $\pm 3\text{MHz}$ ⁽¹⁾ | Wanted signal at -79dBm, modulated interferer at $\pm 3\text{MHz}$. | | -39 / -36 | | dB |
| Selectivity, $\pm 4\text{MHz}$ ⁽¹⁾ | Wanted signal at -79dBm, modulated interferer at $\pm 4\text{MHz}$. | | -45 / -41 | | dB |
| RSSI Accuracy | Dynamic range of -90 to -20dBm | -4 | | 4 | dB |
| BLE 500Kbps (LE Coded) Receiver Characteristics | | | | | |
| Receiver sensitivity | PER <30.2% | | -100.7 – 98.8 | | dBm |
| Receiver saturation | PER <30.2% | | 0 2 | | dBm |
| Co-channel rejection ⁽¹⁾ | Wanted signal at -72dBm, modulated interferer in channel. | | 10 | | dB |
| Selectivity, $\pm 1\text{MHz}$ ⁽¹⁾ | Wanted signal at -72dBm, modulated interferer at $\pm 1\text{MHz}$. | | 0 / 0 | | dB |
| Selectivity, $\pm 2\text{MHz}$ ⁽¹⁾ | Wanted signal at -72dBm, modulated interferer at $\pm 2\text{MHz}$. | | -35 / -25 | | dB |
| Selectivity, $\pm 3\text{MHz}$ ⁽¹⁾ | Wanted signal at -72dBm, modulated interferer at $\pm 3\text{MHz}$. | | -40 / -37 | | dB |
| Selectivity, $\pm 4\text{MHz}$ ⁽¹⁾ | Wanted signal at -72dBm, modulated interferer at $\pm 4\text{MHz}$. | | -45 / -40 | | dB |
| RSSI Accuracy | Dynamic range of -90 to -20dBm | -4 | | 4 | dB |
| BLE 1Mbps (LE 1M) Receiver Characteristics | | | | | |
| Receiver sensitivity ⁽³⁾ | PER <30.2%, 37 byte packets | | - 99.4 – 97.4 | | dBm |
| Receiver sensitivity ⁽³⁾ | PER <30.2%, 255 byte packets | | - 98.1 – 96.2 | | dBm |

6.8 BLE Performance: Receiver Characteristics (continued)

| PARAMETER | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|--|-----|-----------------|-----|------|
| Receiver saturation | PER <30.2% | | 0 | 2 | dBm |
| Co-channel rejection ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer in channel | | 10 | | dB |
| Selectivity, ±1MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±1MHz | | 0 / 0 | | dB |
| Selectivity, ±2MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±2MHz. | | –35 / –28 | | dB |
| Selectivity, ±3MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±3MHz | | –38 / –32 | | dB |
| Selectivity, ±4MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±4MHz | | –45 / –40 | | dB |
| Out-of-band blocking | 30MHz to 2000MHz, Wanted signal at –67dBm | | –23 | | dBm |
| Out-of-band blocking | 2003MHz to 2399MHz, Wanted signal at –67dBm | | –30 | | dBm |
| Out-of-band blocking | 2484 MHz to 2997 MHz, Wanted signal at –67dBm | | –30 | | dBm |
| Out-of-band blocking | 3000MHz to 6GHz, Wanted signal at –67dBm | | –21 | | dBm |
| Intermodulation | Wanted signal at 2402MHz, –64dBm. Two interferers at 2405 and 2408MHz respectively, at the given power level | | –40 | | dBm |
| RSSI accuracy | Dynamic range of –90 to –20dBm | –4 | | 4 | dB |
| BLE 2Mbps (LE 2M) Receiver Characteristics | | | | | |
| Receiver sensitivity ⁽⁴⁾ | PER <30.2% | | –95.2 – 93.3 | | dBm |
| Receiver saturation | PER <30.2% | | 0 | 2 | dBm |
| Co-channel rejection ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer in channel | | 10 | | dB |
| Selectivity, ±2MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±2MHz. | | 0 / 0 | | dB |
| Selectivity, ±4MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±4MHz | | –35 / –28 | | dB |
| Selectivity, ±6MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±6MHz | | –35 / –28 | | dB |
| Alternate channel rejection, ±8MHz ⁽¹⁾ | Wanted signal at –67dBm, modulated interferer at ±8MHz | | –37 / –32 | | dB |
| Out-of-band blocking | 30MHz to 2000MHz, Wanted signal at –67dBm | | –23 | | dBm |
| Out-of-band blocking | 2003MHz to 2399MHz, Wanted signal at –67dBm | | –30 | | dBm |
| Out-of-band blocking | 2484MHz to 2997MHz, Wanted signal at –67dBm | | –30 | | dBm |
| Out-of-band blocking | 3000MHz to 6GHz, Wanted signal at –67dBm | | –21 | | dBm |
| Intermodulation | Wanted signal at 2402MHz, –64dBm. Two interferers at 2405 and 2408MHz respectively, at the given power level | | –44 | | dBm |
| RSSI Accuracy | Dynamic range of –90 to –20dBm | –4 | | 4 | dB |

- (1) Numbers given as C/I dB
(2) BLE Coded PHY sensitivity on channels 17 may degrade by up to 3dB
(3) BLE 1M PHY sensitivity on channels 17 and 39 may degrade by up to 2.5dB
(4) BLE 2M PHY sensitivity on channel 17 may degrade by up to 1.5dB

6.9 BLE Performance: Transmitter Characteristics

The CC33X1 devices support BLE TX setting 0,5,10, or 20dBm

| PARAMETER | DESCRIPTION | MIN | TYP | MAX | UNIT |
|-------------------------------|-------------|-----|---------|-----|------|
| Output Power, highest setting | | | 20 17.8 | | dBm |

6.10 Current Consumption: WLAN Static Modes

All results are based on measurements taken using the [RadioTool](#) evaluation application (typ values are taken with nominal devices at room temp).

| PARAMETER | TEST CONDITIONS | | V _{MAIN} | | V _{PA} | | UNIT |
|--------------------------------|-----------------|--------------------|-------------------|------------------------|-----------------|--------------------|------|
| | | | TYP | MAX | TYP | MAX | |
| Continuous TX ⁽¹⁾ | 1 DSSS | TX Power = 20.5dBm | 92 | | 250 | 290 ⁽¹⁾ | mA |
| | 6 OFDM | TX Power = 20.2dBm | 105 | 170 ⁽¹⁾ (2) | 250 | 290 ⁽¹⁾ | |
| | 54 OFDM | TX Power = 17.4dBm | 110 | | 180 | | |
| | HT MCS0 | TX Power = 20.2dBm | 105 | | 245 | | |
| | HT MCS7 | TX Power = 17.4dBm | 110 | | 180 | | |
| | HE MCS0 | TX Power = 20.2dBm | 105 | | 240 | | |
| | HE MCS7 | TX Power = 17.3dBm | 110 | | 180 | | |
| Continuous RX | | | 62 | | 0 | | mA |
| Continuous Listen (For Beacon) | | | 55.5 | | 0 | | |

- (1) Peak current V_{PA} can hit 340mA during device calibration. Peak current V_{MAIN} of 185mA including peripherals and internal CPU when operating up to 85°C. When ambient temperature is 105°C peak current can reach up to 235mA.
- (2) The maximum current listed for V_{MAIN} is rated up to 85°C. When operating at 105°C the maximum current can reach up to 230mA. For more information please reference this application note <https://www.ti.com/securesources/CC33XX-THERMAL-GUIDELINES-NDA>.

6.11 Current Consumption: 2.4GHz WLAN Use Cases

| MODE | DESCRIPTION | TYP ⁽¹⁾ | UNIT |
|---|---|--------------------|------|
| System with 3.3V to Ext. DC/DC at 85% Efficiency | | | |
| DTIM = 1 | WLAN beacon reception every DTIM=1 (~102ms) | 562 | µA |
| DTIM = 3 | WLAN beacon reception every DTIM=3 (~306ms) | 355 | |
| DTIM = 5 | WLAN beacon reception every DTIM=5 (~510ms) | 313 | |
| System with 1.8V | | | |
| DTIM = 1 | WLAN beacon reception every DTIM=1 (~102ms) | 864 | µA |
| DTIM = 3 | WLAN beacon reception every DTIM=3 (~306ms) | 546 | |
| DTIM = 5 | WLAN beacon reception every DTIM=5 (~510ms) | 482 | |

- (1) Current measured on V_{Main} supply

6.12 Current Consumption: BLE Static Modes

All results are based on measurements taken using the [RadioTool](#) evaluation application (typ values are taken with nominal devices at room temp).

| PARAMETER | TEST CONDITIONS | V _{MAIN} | | V _{PA} | | UNIT |
|-----------|------------------|-------------------|-----|-----------------|-----|------|
| | | TYP | MAX | TYP | MAX | |
| TX | TX Power = 0dBm | 102 | | 35 | | mA |
| | TX Power = 10dBm | 102 | | 100 | | |
| | TX Power = 20dBm | 105 | | 250 | | |

All results are based on measurements taken using the [RadioTool](#) evaluation application (typ values are taken with nominal devices at room temp).

| PARAMETER | TEST CONDITIONS | V _{MAIN} | | V _{PA} | | UNIT |
|-----------|-----------------|-------------------|-----|-----------------|-----|------|
| | | TYP | MAX | TYP | MAX | |
| RX | | 62 | | 0 | | mA |

6.13 Current Consumption: BLE Use Cases

over operating free-air temperature range (unless otherwise noted)

| MODE | TYP ⁽¹⁾ | UNIT |
|---------------------|--------------------|------|
| BLE Advertise 100ms | 3029 | μA |
| BLE Connection, 1s | 633 | μA |

(1) Current measured on V_{Main} supply

6.14 Current Consumption: Device Modes

Nominal device at room temperature

| MODE | DESCRIPTION | V _{MAIN} | | V _{PA} | | UNIT |
|----------|---|-------------------|-----|-----------------|-----|------|
| | | TYP | MAX | TYP | MAX | |
| Shutdown | External supplies are available, device held in reset (nReset is low) | 10 | | 2 | | μA |
| Sleep | Low power mode - RAM in retention | 330 | | 2 | | |

6.15 Timing and Switching Characteristics

6.15.1 Power Supply Sequencing

For proper operation of the CC330x device, perform the recommended power-up sequencing as follows:

1. All supplies (VDD_MAIN_IN, VDDA, VIO, VPA) must be available before nReset is released.
2. For an external slow clock, confirm that the clock is stable before nReset is deasserted (high).
3. The nReset pin must be held low for at least 10μs after stabilization of the external power supplies.

6.15.2 Clocking Specifications

The CC330x device uses two clocks for operation:

- A fast clock running at 40MHz for WLAN/BLE functions
- A slow clock running at 32.768kHz for low-power modes

The slow clock can be generated internally or externally. The fast clock must be generated externally.

6.15.2.1 Slow Clock Generated Internally

To minimize external components, the slow clock can be generated by an internal oscillator. However, this clock is less accurate and consumes more power than sourcing the slow clock externally. For this scenario, leave the Slow_CLK_IN pin unconnected.

6.15.2.2 Slow Clock Using an External Oscillator

For the best power consumption, the slow clock can be generated externally by an oscillator or sourced from elsewhere in the system. The external source must meet the requirements listed below. This clock must be fed into the CC330x pin Slow_CLK_IN and must be stable before nReset is deasserted and the device is enabled.

6.15.2.2.1 External Slow Clock Requirements

| PARAMETER | Description | MIN | TYP | MAX | UNIT |
|----------------------------|-------------|-----|-------|-----|------|
| Input slow clock frequency | Square wave | | 32768 | | Hz |

| PARAMETER | Description | MIN | TYP | MAX | UNIT | |
|--------------------|-------------------------------|---|----------------------|------|------|----|
| Frequency accuracy | Initial + temperature + aging | | | ±250 | ppm | |
| Input Duty cycle | | 30% | 50% | 70% | | |
| T_r/T_f | Rise and fall time | 10% to 90% (rise) and 90% to 10% (fall) of digital signal level | | | 100 | ns |
| V_{IL} | Input low level | 0 | $0.35 \times V_{IO}$ | | V | |
| V_{IH} | Input high level | $0.65 \times V_{IO}$ | | 1.95 | V | |
| Input impedance | | 1 | | | MΩ | |
| Input capacitance | | | | | 5 | pF |

6.15.2.3 Fast Clock Using an External Crystal (XTAL)

The CC330x device supports a crystal-based fast clock (XTAL). The crystal is fed directly between HFXT_P and HFXT_M pins with compatible loading capacitors, and must meet the requirements below.

6.15.2.3.1 External Fast Clock XTAL Specifications

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------------------|-------------------------------|-----|-----|-----|------|
| Supported frequencies | | | 40 | | MHz |
| Frequency accuracy | Initial + temperature + aging | | | ±25 | ppm |
| Load Capacitance, C_L (1) | | 5 | | 13 | pF |
| Equivalent series resistance, ESR | | | | 40 | Ω |
| Drive level | | | 100 | | uW |

(1) Load capacitance, $C_L = [C1 \cdot C2] / [C1 + C2] + C_p$, where $C1$, $C2$ are the capacitors connected on HFXT_P and HFXT_M, respectively, and C_p is the parasitic capacitance (typically 1 to 2 pF). For example, for $C1 = C2 = 6.2\text{pF}$ and $C_p = 2\text{pF}$, then $C_L = 5\text{pF}$.

6.16 Interface Timing Characteristics

6.16.1 SDIO Timing Specifications

SDIO is the main host interface for WLAN, and supports a maximum clock rate of 52MHz. The CC330x device also supports shared SDIO interface for both BLE and WLAN.

6.16.1.1 SDIO Timing Diagram—Default Speed

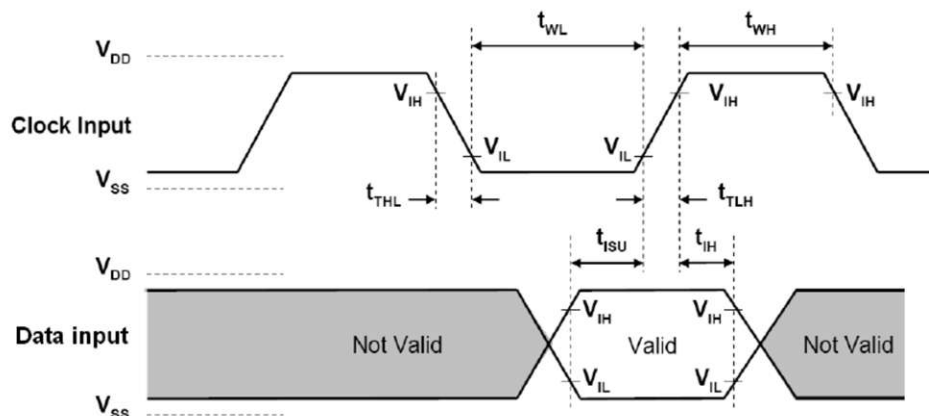


Figure 6-1. SDIO Default Input Timing

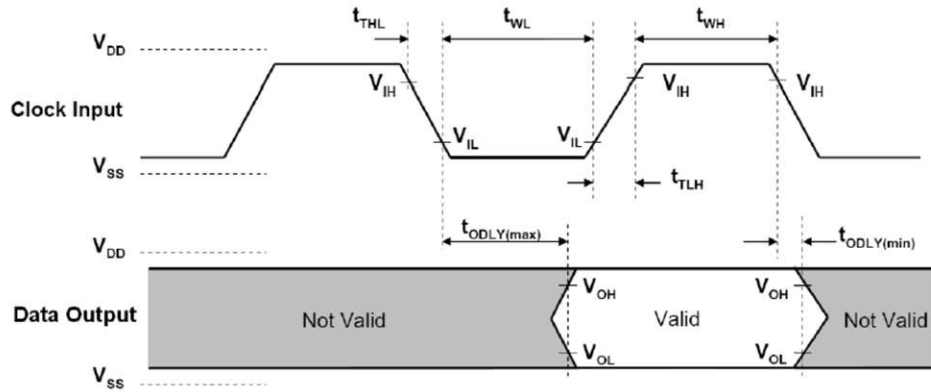


Figure 6-2. SDIO Default Output Timing

6.16.1.2 SDIO Timing Parameters: Default Speed

| PARAMETER | DESCRIPTION | MIN | MAX | UNIT |
|--------------------|---|-----|-----|------|
| f_{clock} | Clock frequency, CLK | | 26 | MHz |
| t_{High} | High Period | 10 | | ns |
| t_{Low} | Low Period | 10 | | |
| t_{TLH} | Rise time, CLK | | 10 | |
| t_{THL} | Fall time, CLK | | 10 | |
| t_{ISU} | Setup time, input valid before CLK \uparrow | 5 | | |
| t_{IH} | Hold time, input valid after CLK \uparrow | 5 | | |
| t_{ODLY} | Delay time, CLK \downarrow to output valid | 2 | 14 | |
| C_L | Capacitive load on outputs | 15 | 40 | pF |

6.16.1.3 SDIO Timing Diagram—High Speed

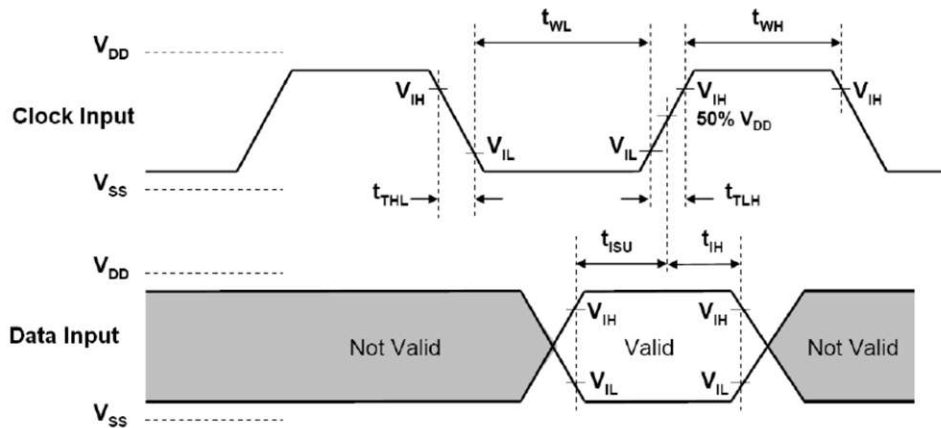


Figure 6-3. SDIO HS Input Timing

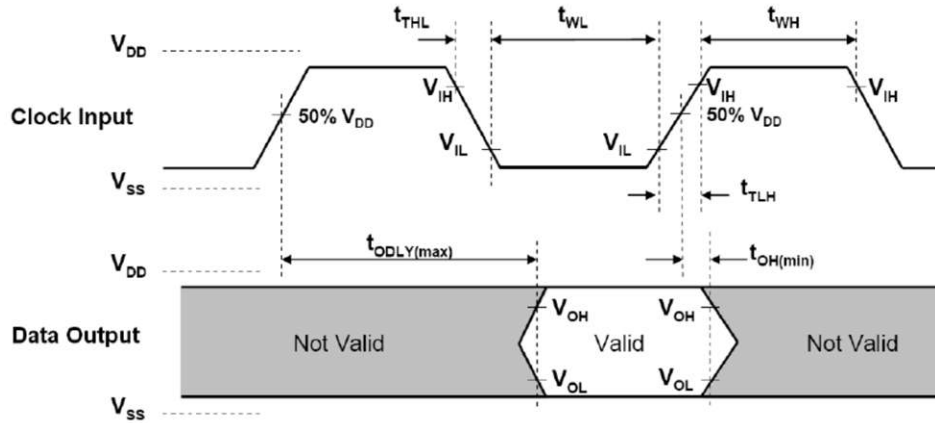


Figure 6-4. SDIO HS Output Timing

6.16.1.4 SDIO Timing Parameters: High Speed

| PARAMETER | DESCRIPTION | MIN | MAX | UNIT |
|--------------------|---|-----|-----|------|
| f_{clock} | Clock frequency, CLK | | 52 | MHz |
| t_{High} | High Period | 7 | | ns |
| t_{Low} | Low Period | 7 | | |
| t_{TLH} | Rise time, CLK | | 3 | |
| t_{THL} | Fall time, CLK | | 3 | |
| t_{ISU} | Setup time, input valid before CLK \uparrow | 6 | | |
| t_{IH} | Hold time, input valid after CLK \uparrow | 2 | | |
| t_{ODLY} | Delay time, CLK \uparrow to output valid | 2 | 14 | |
| C_L | Capacitive load on outputs | 15 | 40 | pF |

6.16.2 SPI Timing Specifications

The SPI is another host interface for WLAN. The CC330x devices also support shared SPI interface for both BLE and WLAN.

6.16.2.1 SPI Timing Diagram

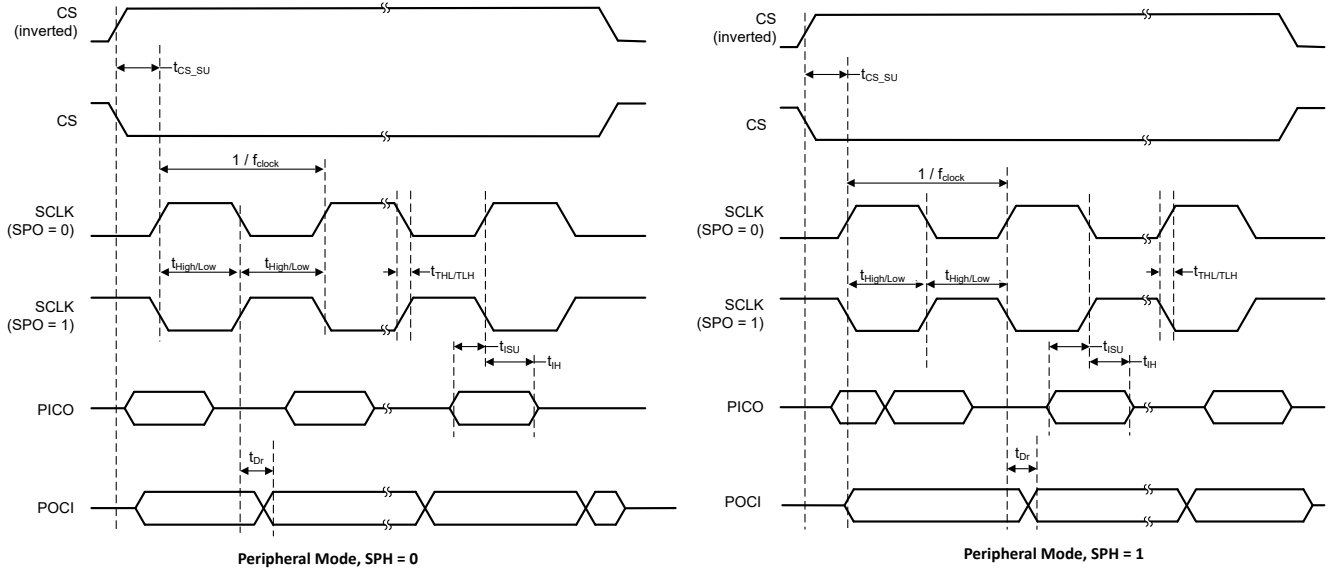


Figure 6-5. SPI Timing

6.16.2.2 SPI Timing Parameters

| PARAMETER | DESCRIPTION | MIN | MAX | UNIT |
|---------------------------|---|-----|-----|------|
| f_{clock} | Clock frequency, CLK | | 26 | MHz |
| t_{High} | High Period | 10 | | ns |
| t_{Low} | Low Period | 10 | | |
| t_{TLH} | Rise time, CLK | | 3 | |
| t_{THL} | Fall time, CLK | | 3 | |
| t_{CSsu} | CS Setup time, CS valid before CLK \uparrow | 3 | | |
| t_{ISU} | PICO, input valid before CLK \uparrow | 3 | | |
| t_{IH} | PICO Hold time, input valid after CLK \uparrow | 3 | | |
| $t_{Dr}, t_{Df} - Active$ | Delay time, CLK \uparrow/\downarrow to output valid | 2 | 10 | |
| $t_{Dr}, t_{Df} - Sleep$ | Delay time, CLK \uparrow/\downarrow to output valid | | 12 | |
| C_L | Capacitive load on outputs | 15 | 40 | |

6.16.3 UART 4-Wire Interface

UART is the main host interface for BLE, which supports the host controller interface (HCI) transport layer.

6.16.3.1 UART Timing Diagram

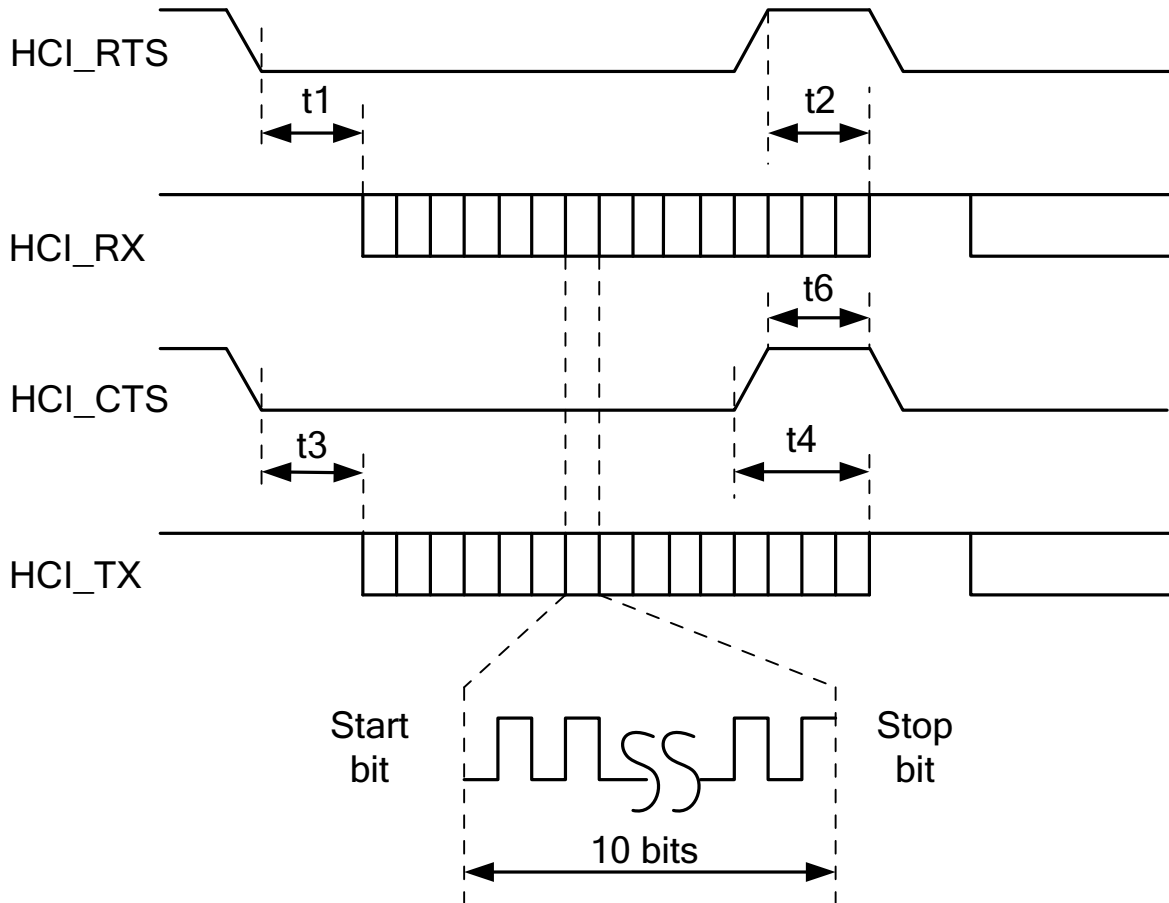


Figure 6-6. UART Timing Diagram

6.16.3.2 UART Timing Parameters

| PARAMETER | CONDITION | MIN | TYP | MAX | UNIT |
|-----------------------------|--------------------------|--------|-----|--------|------|
| Baud rate | | 37.5 | | 4364 | kbps |
| Baud rate accuracy per byte | Receive/Transmit | -2.5% | | +1.5% | |
| Baud rate accuracy per bit | Receive/Transmit | -12.5% | | +12.5% | |
| CTS low to TX_DATA on | | 0 | 2 | | ms |
| CTS high to TX_DATA off | Hardware flow control | | | 1 | Byte |
| CTS high pulse width | | 1 | | | bit |
| RTS low to RX_DATA on | | 0 | 2 | | ms |
| RTS high to RX_DATA off | Interupt set to 1/4 FIFO | | | 16 | Byte |

7 Detailed Description

The CC330x offers Wi-Fi 6 (802.11ax) and BLE 5.4 (CC3301 devices) in a single-chip solution while maintaining compatibility with Wi-Fi 4 (802.11 a/b/g/n) and Wi-Fi 5 (802.11ac). These devices are ideal for cost-sensitive embedded applications with a Linux or RTOS host running TCP/IP. CC330x brings the efficiency of Wi-Fi 6 to embedded device applications for the Internet of Things (IoT) with a small PCB footprint and a highly optimized bill of materials. The device features an integrated 2.4GHz PA for a complete wireless solution with up to +20.5dBm output power, operating temperature of -40°C to $+105^{\circ}\text{C}$, and application throughput up to 50Mbps. The CC330x devices include BSD-3 clause software distributed in integrated ROM. License terms are provided in the product software manifest available in the [CC33XX-Software](#) downloadable product.

7.1 WLAN Features

The device supports the following WLAN features:

- 2.4GHz, 20MHz, single spatial stream
- MAC, baseband, and RF transceiver with support for IEEE 802.11 a/b/g/n/ax
- OFDMA, trigger frame, MU-MIMO (downlink), basic service set coloring, and target wake time (TWT) for improved efficiency
- Hardware-based encryption and decryption supporting WPA2 and WPA3
- Multirole support (for example, concurrent STA and AP) to connect with Wi-Fi devices on different RF channels (Wi-Fi networks)
- Optional antenna diversity or selection
- 3-wire or 1-wire PTA for external coexistence with additional 2.4GHz radios (for example, Thread or Zigbee)
- Excellent interoperability
- Support for 4-bit SDIO or SPI host interfaces

7.2 Bluetooth Low Energy Features

The device supports the following Bluetooth low energy features:

- Bluetooth Low Energy 5.4
- LE coded PHYs (long range), LE 2M PHY (high speed), and advertising extension
- Host controller interface (HCI) transport with option for UART or shared SDIO

8 Applications, Implementation, and Layout

Note

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes, as well as validating and testing their design implementation to confirm system functionality.

Figure 8-1 shows the reference schematic for the CC3301 using an optimized bill of materials.

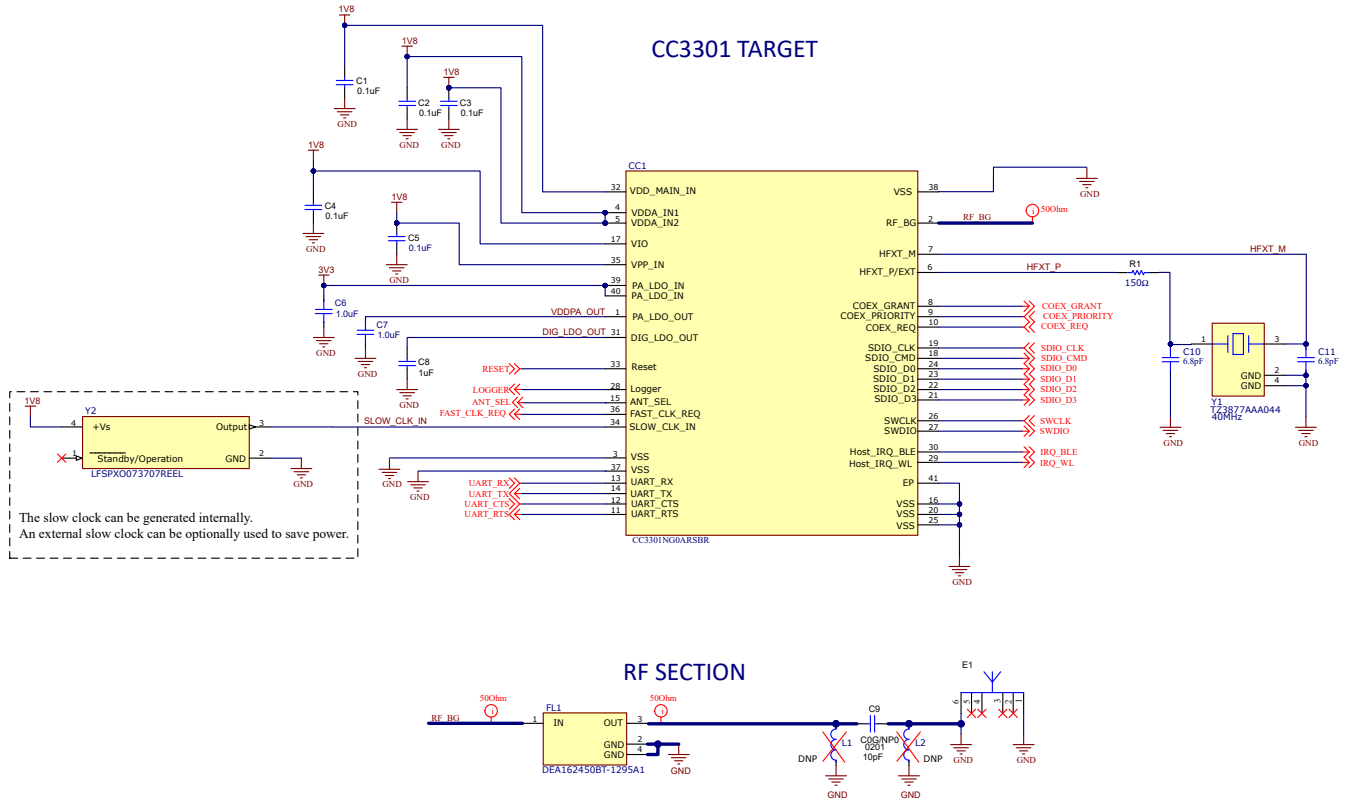


Figure 8-1. CC3301 Reference Schematic

1. The slow clock can be generated internally. An external slow clock can be optionally used to save power.
2. For more information on antenna selection and matching, see the [CC33xx Hardware Integration](#).

9 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop systems are listed below.

9.1 Third-Party Products Disclaimer

TI'S PUBLICATION OF INFORMATION REGARDING THIRD-PARTY PRODUCTS OR SERVICES DOES NOT CONSTITUTE AN ENDORSEMENT REGARDING THE SUITABILITY OF SUCH PRODUCTS OR SERVICES OR A WARRANTY, REPRESENTATION OR ENDORSEMENT OF SUCH PRODUCTS OR SERVICES, EITHER ALONE OR IN COMBINATION WITH ANY TI PRODUCT OR SERVICE.

9.2 Device Nomenclature Boilerplate

Device development evolutionary flow:

- X** Experimental device that is not necessarily representative of the final device's electrical specifications and may not use production assembly flow.
- P** Prototype device that is not necessarily the final silicon die and may not necessarily meet final electrical specifications.
- null** Production version of the silicon die that is fully qualified.

Support tool development evolutionary flow:

- TMDX** Development-support product that has not yet completed Texas Instruments internal qualification testing.
- TMDS** Fully-qualified development-support product.

X and P devices and TMDX development-support tools are shipped against the following disclaimer:

Device development evolutionary flow:

- TMX** Experimental device that is not necessarily representative of the final device's electrical specifications and may not use production assembly flow.
- TMP** Prototype device that is not necessarily the final silicon die and may not necessarily meet final electrical specifications.
- TMS** Production version of the silicon die that is fully qualified.

Support tool development evolutionary flow:

- TMDX** Development-support product that has not yet completed Texas Instruments internal qualification testing.
- TMDS** Fully-qualified development-support product.

TMX and TMP devices and TMDX development-support tools are shipped against the following disclaimer:

"Developmental product is intended for internal evaluation purposes."

Production devices and TMDS development-support tools have been characterized fully, and the quality and reliability of the device have been demonstrated fully. TI's standard warranty applies.

Predictions show that prototype devices (X or P) have a greater failure rate than the standard production devices. Texas Instruments recommends that these devices not be used in any production system because their expected end-use failure rate still is undefined. Only qualified production devices are to be used.

9.3 Tools and Software

Design Kits and Evaluation Modules

| | |
|---|--|
| CC330x Reference Design Files | CC330x reference design CAD source files. TI recommends using this design as a reference when creating the layout to achieve the RF performance listed in this data sheet. |
| CC3351 BoosterPack plug-in module | The CC3351 BoosterPack™ plug-in module (BP-CC3351) is a test and development board that can be easily connected to TI LaunchPad™ development kits or processor boards; thus, enabling rapid software development. |
| CC3351 M.2 card plug-in module | The CC3351 M.2 card plug-in module (M2-CC3351) is a test and development board that can be easily connected to TI processor boards or other processor boards with an M.2 Key E interface support; thus, enabling rapid software development. |

Software

| | |
|--|---|
| SimpleLink Wi-Fi Toolbox | SimpleLink Wi-Fi Toolbox is a collection of tools to help development and testing of the CC33xx. The Wi-Fi toolbox package provides all the capabilities required to debug and monitor WLAN/Bluetooth® Low Energy firmware with a host, perform RF validation tests, run a pretest for regulatory certification testing, and debug hardware and software platform integration issues. |
| CC33xx device drivers | The CC33xx devices are single-chip Wi-Fi 6 and Bluetooth Low Energy 5.4 companion devices designed for both Linux and RTOS-based systems. CC33XX-SOFTWARE is a collection of software development sources aimed to facilitate quick setup, out-of-box experience, and accelerate development in Linux or RTOS environments. These devices include BSD-3 Clause software distributed in integrated ROM. License terms are provided in the product software manifest available in the CC33XX-Software downloadable product. |

9.4 Documentation Support

To receive notification of documentation updates, navigate to the device product folder on [ti.com](https://www.ti.com). Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

Application Reports

| | |
|---|---|
| CC33xx Production Line Guide | Texas Instruments™ provides many resources to assist users in quickly examining the functionality and performance of TI devices. This document provides the necessary information to guide the user in production line testing for CC33xx. The device's functions can be checked using tools and software provided by Texas Instruments. Performance testing is more involved as external equipment is required for a thorough examination. |
| SimpleLink CC33xx Security Features | This document describes the CC33xx security-related features, which are made available to vendors through an ecosystem that incorporates simple and concise APIs, tools, and documentation. |

User's Guides

| | |
|---|---|
| CC33xx WLAN Features User's Guide | This document provides information about CC33xx family of devices and Wi-Fi® features, as well as TI proprietary enhancements. The document does not provide the complete application programming interface (API) set, but a high-level overview of the features. |
| CC33xx Hardware Integration | This document describes how to integrate the CC33xx into any system and the hardware requirements for this device. Layout and schematic considerations are listed here as well, |

which TI highly recommends following to achieve the device performance listed in this data sheet.

9.5 Support Resources

TI E2E™ support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

Linked content is provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

9.6 Trademarks

SimpleLink™ is a trademark of TI.

Wi-Fi™ is a trademark of Wi-Fi Alliance.

TI E2E™ is a trademark of Texas Instruments.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc..

Linux® is a registered trademark of Linus Torvalds in the U.S. and other countries..

All trademarks are the property of their respective owners.

9.7 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

9.8 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

10 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from July 9, 2025 to October 1, 2025 (from Revision E (July 2025) to Revision F (October 2025))

| | Page |
|------------------------------|------|
| • Updated BLE Use Cases..... | 13 |

Changes from December 19, 2023 to July 9, 2025 (from Revision D (December 2023) to Revision E (July 2025))

| | Page |
|--|------|
| • Updated specifications and descriptions..... | 1 |
| • Updated reference schematic..... | 20 |

11 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

| Orderable part number | Status (1) | Material type (2) | Package Pins | Package qty Carrier | RoHS (3) | Lead finish/ Ball material (4) | MSL rating/ Peak reflow (5) | Op temp (°C) | Part marking (6) |
|--------------------------------|---------------|----------------------|-----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---------------------|
| CC3300ENJARSBR | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3300 ENJA |
| CC3300ENJARSBR.A | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3300 ENJA |
| CC3300ENJARSBR.B | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3300 ENJA |
| CC3301ENJARSBR | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3301 ENJA |
| CC3301ENJARSBR.A | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3301 ENJA |
| CC3301ENJARSBR.B | Active | Production | WQFN (RSB) 40 | 3000 LARGE T&R | Yes | SN | Level-2-260C-1 YEAR | -40 to 105 | CC3301 ENJA |

(1) **Status:** For more details on status, see our [product life cycle](#).

(2) **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

(4) **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|----------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| CC3300ENJARSBR | WQFN | RSB | 40 | 3000 | 330.0 | 12.4 | 5.3 | 5.3 | 1.1 | 8.0 | 12.0 | Q2 |
| CC3301ENJARSBR | WQFN | RSB | 40 | 3000 | 330.0 | 12.4 | 5.3 | 5.3 | 1.1 | 8.0 | 12.0 | Q2 |

TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|----------------|--------------|-----------------|------|------|-------------|------------|-------------|
| CC3300ENJARSBR | WQFN | RSB | 40 | 3000 | 367.0 | 367.0 | 35.0 |
| CC3301ENJARSBR | WQFN | RSB | 40 | 3000 | 367.0 | 367.0 | 35.0 |

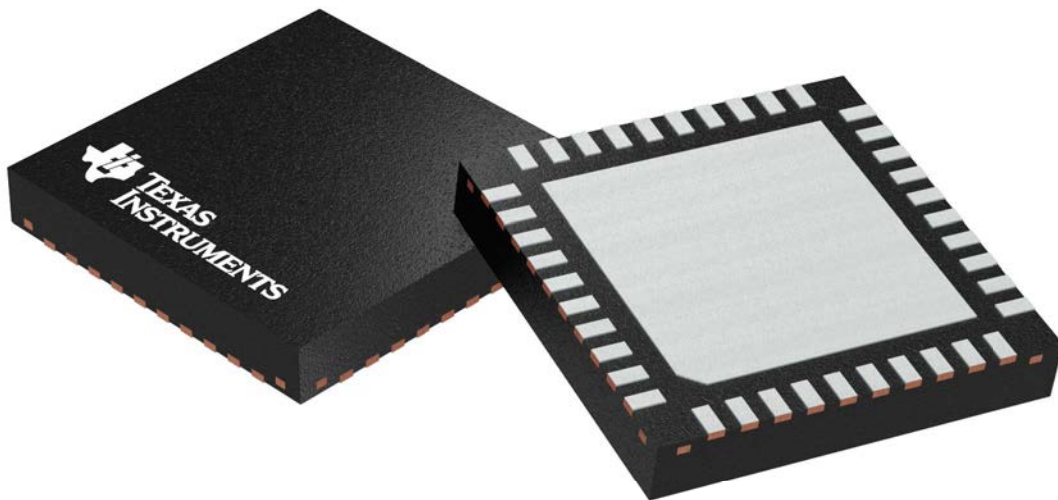
GENERIC PACKAGE VIEW

RSB 40

WQFN - 0.8 mm max height

5 x 5 mm, 0.4 mm pitch

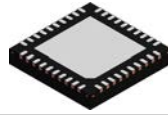
PLASTIC QUAD FLATPACK - NO LEAD



Images above are just a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

4207182/D

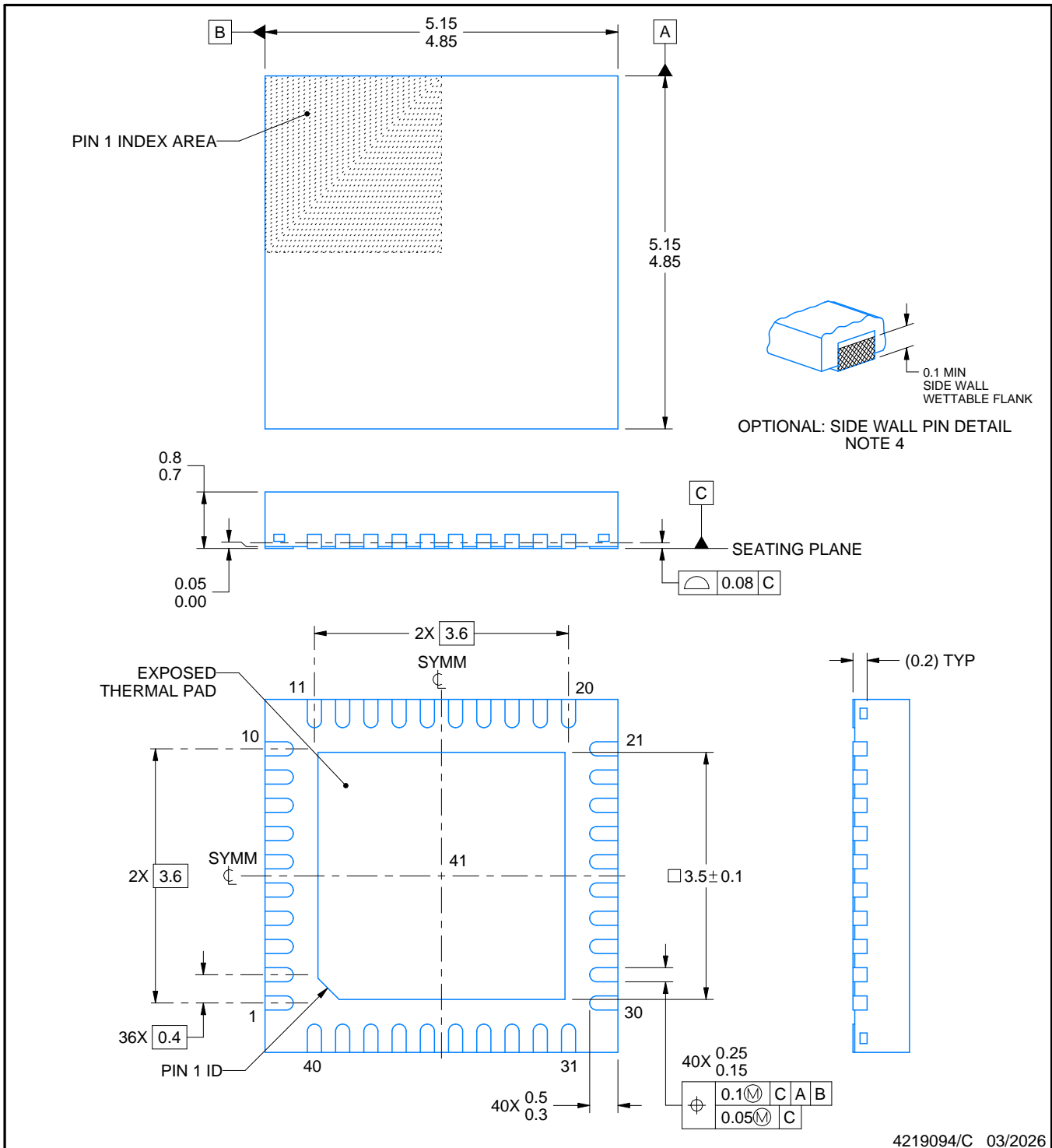
RSB0040B



PACKAGE OUTLINE

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



NOTES:

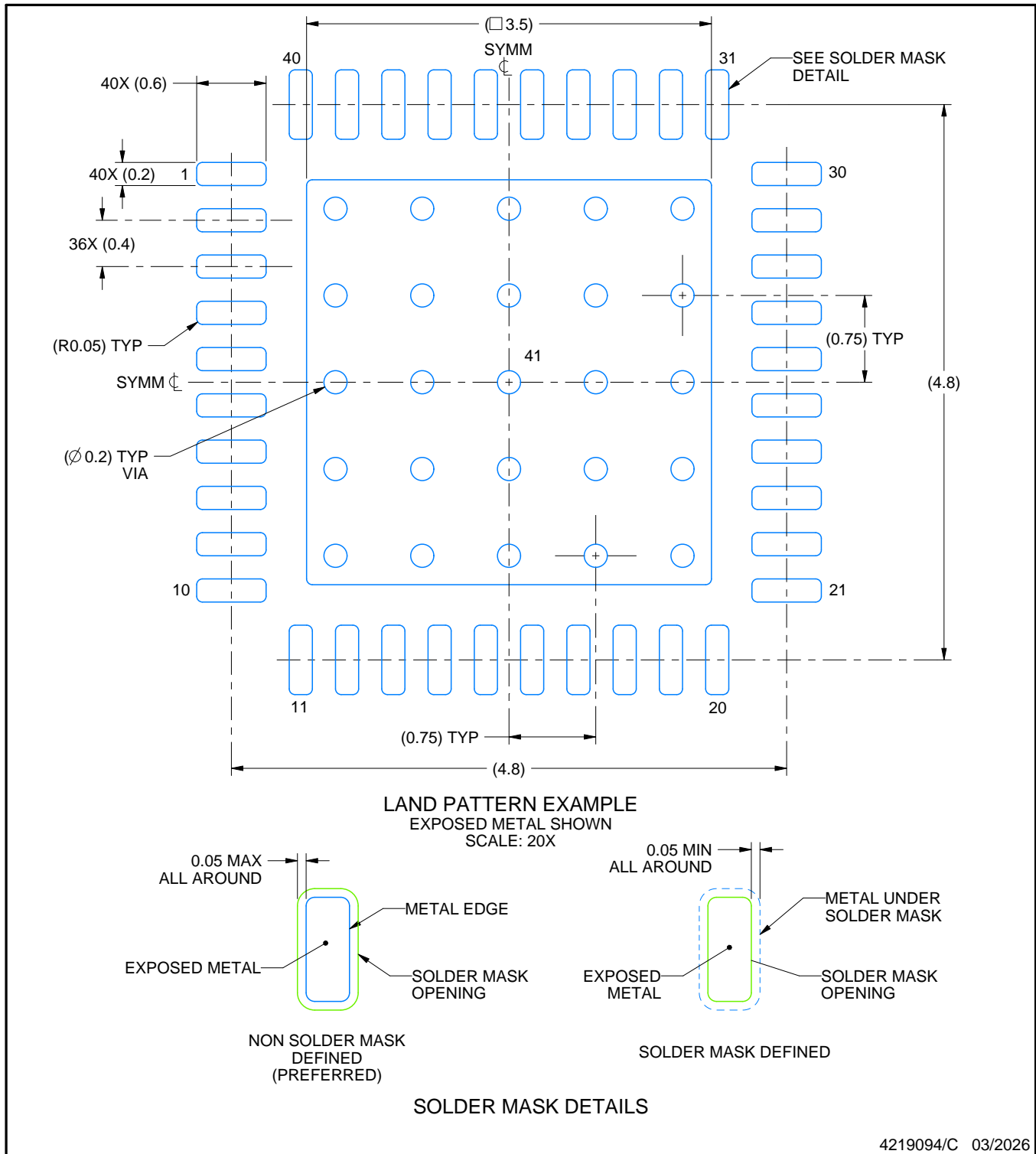
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.
4. Minimum 0.1 mm solder wetting on pin side wall. Available for wettable flank version only.

EXAMPLE BOARD LAYOUT

RSB0040B

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



4219094/C 03/2026

NOTES: (continued)

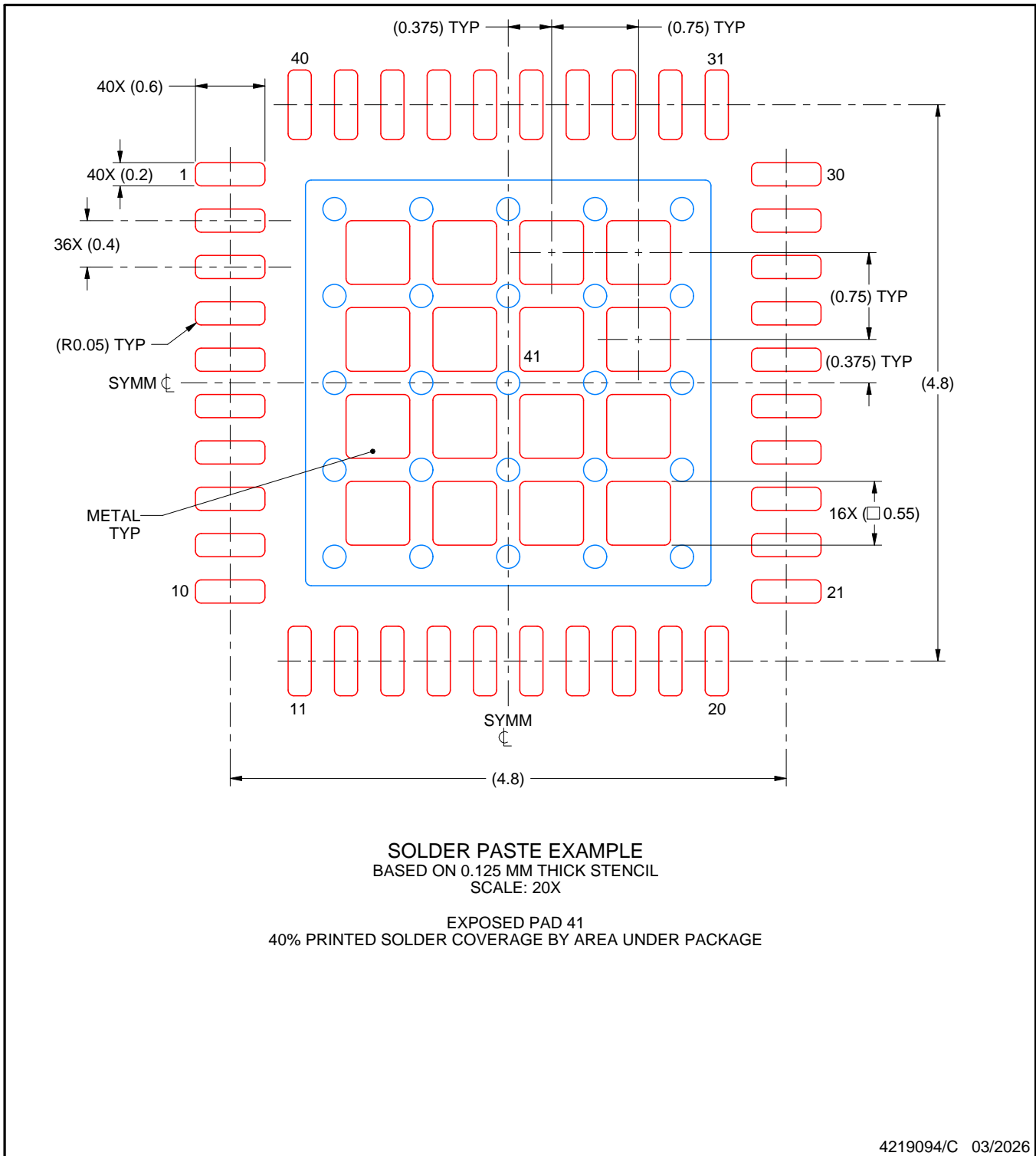
5. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/sluea271).
6. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

EXAMPLE STENCIL DESIGN

RSB0040B

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

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